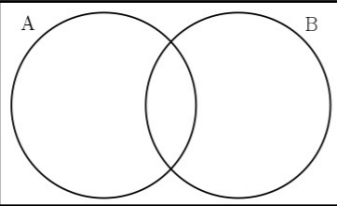
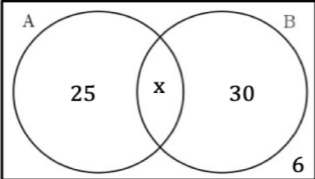


MATHEMATICS - YEAR 10 HIGHER - BLOCK 1

A VENN DIAGRAMS AND SET NOTATION

1	Venn Diagram	
2	Universal set	A set containing all of the elements we are interested in, denoted ξ
3	To find the intersection	<p>Subtract the overlap in elements from the total number.</p> <p>For example, ξ contains 50 elements:</p> $25 + 30 + 6 = 61$ $61 - 50 = 11$ $x = 11$ 
4	Probabilities from a Venn Diagram	Write as a fraction, using the elements in the universal set as the denominator. For example, the probability of A and B in part 3 is $\frac{11}{50}$.
5	The probability of A given that B	<p>This means 'what is the probability of A, selecting from those that are also in B'?</p> <p>Writing a fraction, use the total of the 'given that' event as the denominator and the intersection of both A and B as the numerator. E.g. From the Venn diagram above, the probability of A given B is $\frac{11}{41}$.</p>
6	Product rule	To find total number of outcomes for two or more events, multiply the number of outcomes for each event together. E.g. if there are 3 starters, 4 mains and 5 desserts, there are 60 possible combinations because $3 \times 4 \times 5 = 60$.

B SURFACE AREA AND VOLUME

1	Convert units of area	<p>For example:</p> <p>To convert m to cm, multiply by 100</p> <p>To convert m² to cm², multiply by 10,000 (100²)</p>
2	Convert units of volume	<p>For example:</p> <p>To convert m to cm, multiply by 100</p> <p>To convert m³ to cm³, multiply by 1,000,000 (100³)</p>
3	Prism	A 3D shape which has a constant cross section.

4	Volume of any prism	Area of cross-section x length
5	Volume of a cylinder	$\pi r^2 h$
6	Volume of a cone	$\frac{1}{3} \pi r^2 h$
7	Volume of a pyramid	$\frac{1}{3}$ x area of base x perpendicular height
8	Frustum	The 3D shape that is left-over after you cut the top off of a cone or pyramid, parallel to the base.
9	Volume of a sphere	$\frac{4}{3} \pi r^3$
10	Surface area of a prism	$4\pi r^2$
11	Surface area of a cylinder	$2\pi r^2 + 2\pi r h$
12	Surface area of a cone	$\pi r^2 + 2\pi r l$ (where l is slant height)
13	Surface area of a sphere	$4\pi r^2$

C COMPOUND MEASURES

1	Density	$D = \frac{M}{V}$
2	Pressure	$P = \frac{F}{A}$

D SECTORS

1	Arc length	$\frac{\theta}{360} \times \pi d$
2	Sector area	$\frac{\theta}{360} \times \pi r^2$